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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/740,552	09/19/2001	Kouichi Taniguchi	09792909-4727	4498

7590 07/08/2002

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EXAMINER

NGO, HUYEN LE

ART UNIT PAPER NUMBER

2871

DATE MAILED: 07/08/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/740,552

Applicant(s)

TANIGUCHI, KOUICHI

Examiner

Julie-Huyen L. Ngo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) 1-9 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/19/2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file. **DETAILED ACTION**

Drawings

Figure 8 is objected to because different reference signs "10" and "16" are used to designate the same element. ✓

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following features recited in the claims must be shown or the feature(s) canceled from the claim(s). No new matter should be entered:

- "a drive substrate having active devices mounted thereon for driving liquid crystal" and "an opposite substrate having opposite electrodes," recited in claim 1 ✓
- "seal pattern is provided on said drive substrate and is formed on a planarization film which covers the active devices formed on said drive substrate," recited in claim 4
- "seal pattern is provided on said opposite substrate, and is formed on a transparent electrode film which covers said opposite substrate" recited in claim 5

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A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter recited in claim 5 regarding BOTH the opposite electrodes (recited in claim 1) and the transparent electrode film. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction is required:

Claim Objections

Claims 1 and 9 are objected because it is unclear of how the seal pattern is formed "in a film forming step for forming pixels" as recited in the last clause. Also claim 1 is a device claim and this forming step does not appear to be proper recited in this claim.

Claim 6 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 6 appears to be a method claim, which cannot be depended on a device claim 1. Also, it is unclear from the language of claim 6, lines 3-5, whether the semiconductor substrate or the seal

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pattern is formed by spin coating. It appears from the specification (p.13) that the seal pattern is formed by spin coating.

In line 5 of claim 9, it appears that there should be a word such as __ *having* __ or __ *comprising* __ between "opposite substrate" and "opposite electrodes."

Claim 5 is objected to because it appears that "a transparent electrode film" is referring to the opposite electrodes recited earlier in claim 1.

In claim 8, "said seal patterns" lacks antecedence.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokoyama et al. (US6144435A).

With respect to claim 1, Yokoyama et al. teach (Figs. 1, 15 and 17) a liquid crystal display comprising:

- a drive substrate having active devices (scan and data signal control circuits 104/106, Fig. 17) mounted thereon for driving liquid crystal;
- an opposite substrate having opposite electrodes provided thereon as opposed to said active devices;

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- a seal pattern 21 for joining both substrates so as to be faced with each other and uniformly spaced with a gap (col. 23, lines 23-41);
- liquid crystal 13 filled in such gap, wherein said seal pattern is provided on at least either one of said drive substrate and said opposite substrate in a film forming step for forming pixels (col. 15 lines 31-36).

With respect to claims 2, 3 and 7, Yokoyama et al. further teach (Figs. 1, 15 and 17, col. 14 lines 50-65) that said seal pattern joins both substrates through:

1) being fused on a surface thereof by heating to thereby ensure close contact without pressing for avoiding damage the liquid crystal panel,

or

2) being pressurized on a surface thereof by pressing to thereby ensure close contact.

With respect to claim 4, Yokoyama et al. further teach (Figs. 1, 15 and 17) that said seal pattern is provided on said drive substrate, and is formed on short circuit prevent layers 8a-b acting as a planarization film which covers the active devices formed on said drive substrate.

With respect to claim 5, Yokoyama et al. teach that (Figs. 1, 15 and 17) said seal pattern is provided on said opposite substrate, and is formed on a transparent electrode film, which covers said opposite substrate.

With respect to claim 9, Yokoyama et al. teach (Figs. 1, 15 and 17) fabricating a liquid crystal display comprising the steps of:

- forming on a drive substrate active devices for driving liquid crystal;

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- forming on an opposite substrate opposite electrodes as opposed to said active devices;
- forming a seal pattern on at least either one of said drive substrate and said opposite substrate;
- joining as interposed with said seal pattern both substrates so as to be faced with each other and uniformly spaced with a gap;
- filling liquid crystal into said gap, wherein said seal pattern is formed in a film-forming step for forming pixels.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokoyama et al. (US6144435A) as applied to claim 1 above, in view of Omori et al. (JP357092315A) and Ito et al. (JP411174487A).

Omori et al. teach forming a seal film for forming a seal pattern on a semiconductor substrate to be processed into said drive substrate or opposite substrate said seal pattern by spin coating for controlling the thickness of the seal film in an order of sub micrometers.

Ito et al. teach (Fig. 2) forming a seal pattern with the steps of:

- providing a seal film 31 with a mask 32;
- submitting said seal film to light exposure through said mask;
- developing the exposed seal film.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the seal pattern in Yokoyama LCD by (a) spin

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coating for controlling the thickness of the seal film; (b) providing said seal film with a mask, submitting said seal film to light exposure through said mask, developing the exposed seal film for forming the sealing portions.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokoyama et al. (US6144435A) as applied to claim 7 above, in view of Tadokoro (JP403287232A).

Tadokoro teaches (Fig. 1) forming seal patterns 14/15 on both of a drive substrate and a opposite substrate, and the individual surfaces of said seal patterns are corrugated so as to be engaged with each other to thereby allow both substrates to be joined as engaged through the seal patterns, and facilitate the sealing between said substrates for improving the adhesive strength of a sealing material layer.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display as Yokoyama et al. disclosed with seal patterns provided on both of drive substrate and opposite substrate, and the individual surfaces of said seal patterns corrugated so as to be engaged with each other to thereby allow both substrates to be joined as engaged through the seal patterns, and facilitate the sealing between said substrates for improving the adhesive strength of a sealing material layer.

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Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Sakai et al. (US6222603B1) disclose a method of manufacturing liquid crystal display device with a double seal with printing seal pattern.

Kazlas et al. (US5919606A) disclose (Figs. 5A-B) a liquid crystal cell with edge seal 540 formed on bottom substrate or top substrate.

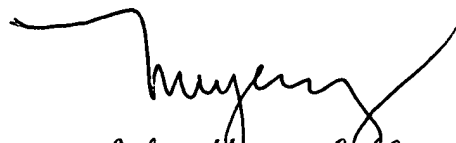
Nagae et al. (US6078379A) disclose liquid crystal display device provided with seal material and spacer made of resist on substrate.

Contact Information

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Julie Ngo, whose telephone number is (703) 305-3508.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0956.

Papers related to this application may be submitted to Art Unit 2871 by facsimile transmission. The Examiner direct fax number is (703) 746-4709. Please call before sending any paper.


Julie Huyen L. Ngo
Patent Examiner
Art Unit 2871

June 28, 2002